HP UPS R5500
User Guide

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Audience assumptions

This guide is for the person who operates, configures, maintains, and troubleshoots UPSs. HP assumes you are qualified in the servicing of high-voltage equipment and trained in recognizing hazards in products with hazardous energy levels.

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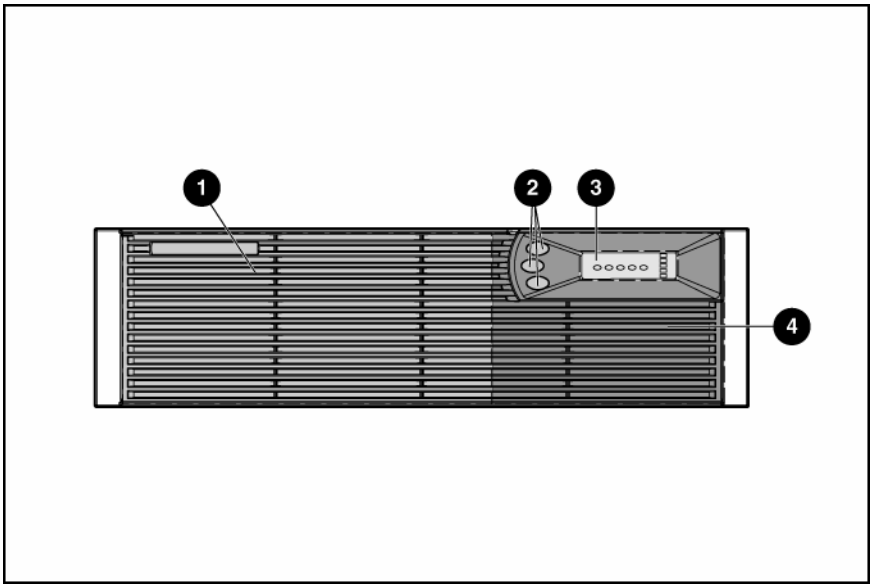
Component identification

UPS R5500 overview

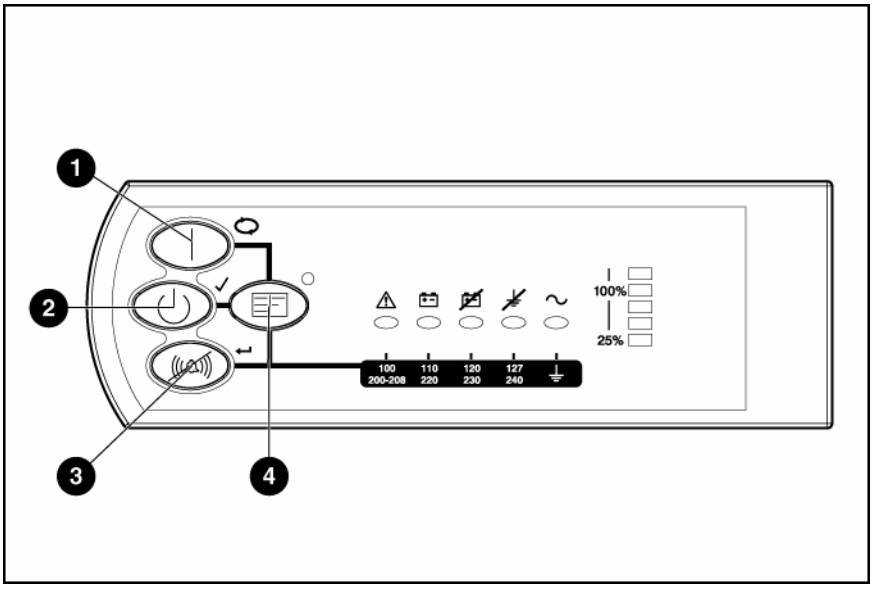
The HP UPS R5500 features a 3U rack-mount design and offers power protection for loads up to 5000 VA/4500 W (NA/JPN) or 6000 VA/5400 W (INTL). The modular design includes two hot-swappable battery modules and one hot-swappable electronics module, allowing for reduced downtime and ease of replacement. The UPS contains an enhanced front-panel display, two independently controlled load segments, and a communications port for data exchange with a host computer. Supported features include REPO circuitry, power management software, and various hardware options.

UPS front panel



Item	Description
1	Battery compartment
2	Control buttons
3	LED display
4	Electronics compartment

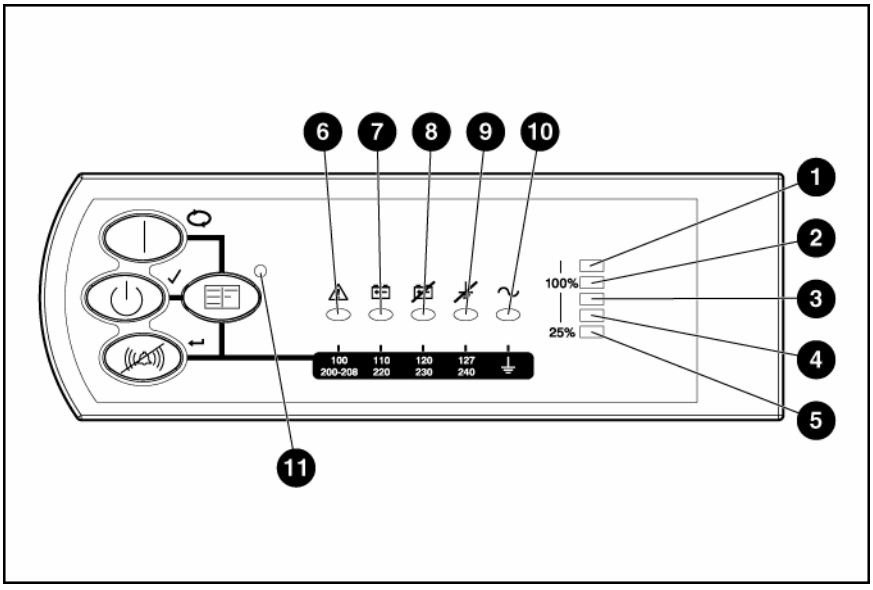
UPS front panel controls



The front panel is shown with the bezel removed.

Item	Description	Function
1	On button	Powers up the UPS ("Starting power to the load" on page 24)
2	Standby button	Places the UPS in Standby mode (on page 27)
3	Test/Alarm Reset button	• Silences UPS alarms ("Silencing an audible alarm" on page 30) • Tests the LEDs ("Testing the LEDs" on page 29)
4	Configure button	Places the UPS in Configure mode (on page 28)

UPS front panel LED indicators

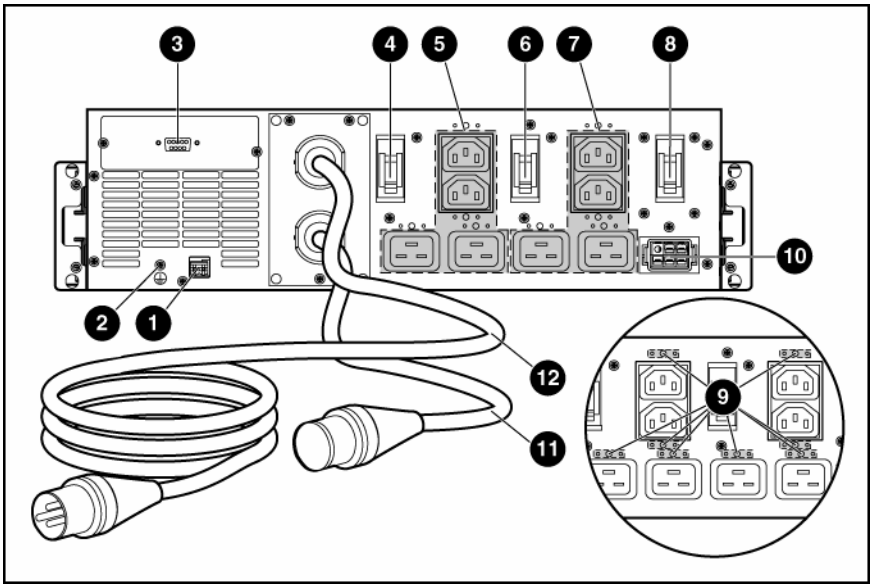


The front panel is shown with the bezel removed.

Item	LED description
1	Overload
2	76% to 100% load
3	51% to 75% load (2 ERMs)
4	26% to 50% load (1 ERM)
5	0% to 25% load (0 ERMs)
6	General Alarm
7	On Battery
8	Battery Fault
9	Site Wiring Fault
10	Utility
11	Configure Mode On

For more information, see "LED and audible alarm troubleshooting (on page 39)" .

UPS rear panel



Item	Description
1	REPO port
2	Ground bonding screw
3	Communications port/option slot
4	Load segment 1 circuit breaker (controls the C19 and C13 receptacles, but does not control the large output receptacle)
5	Load segment 1 (two IEC-320-C19 receptacles, two IEC-320-C13 receptacles, and one large output receptacle)
6	Load segment 2 circuit breaker
7	Load segment 2 (two IEC-320-C19 receptacles and two IEC-320-C13 receptacles)
8	Battery circuit breaker
9	Cord retention clip attachment locations
10	ERM connector
11	Large output NEMA L6-30R receptacle (NA/JPN) or IEC-309-32A receptacle (INTL) associated with load segment 1
12	Input power line cord with NEMA L6-30 plug (NA/JPN) or IEC-309-32A plug (INTL)

REPO port

The UPS includes an isolated REPO port. When properly wired, the REPO feature enables the power at the UPS output receptacles to be switched off from a remote location. To use this feature, the REPO port must be connected to a remote, normally open switch (not supplied). The REPO switch is used in conjunction with a main disconnect device that removes the AC source from the input of the UPS. When the switch is closed:

- The REPO feature immediately powers down protected devices and does not utilize the orderly shutdown procedure initiated by power management software.
- The REPO feature shuts down UPS units operating under either utility or battery power.

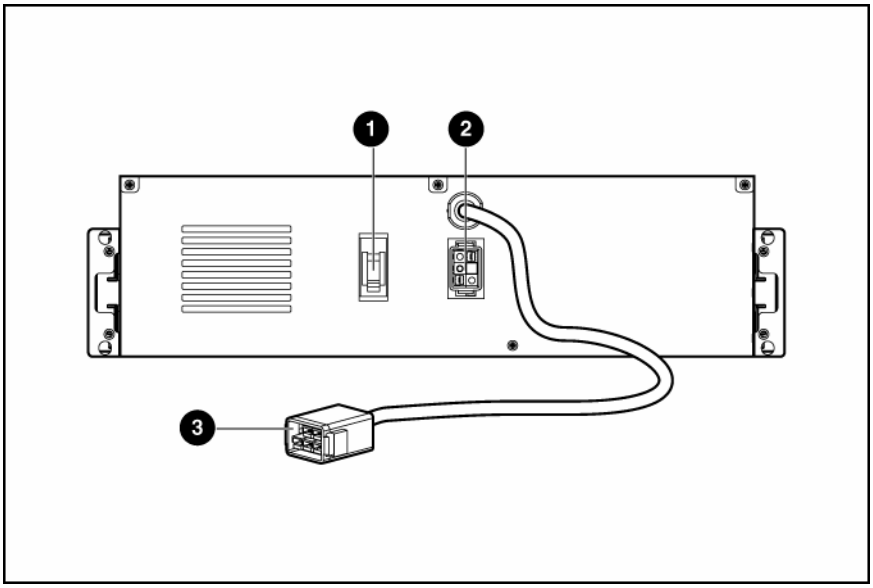
> **NOTE:** If the UPS was operating on battery power when the remote switch was closed, no power is available to the load devices until utility power is restored and the UPS has been manually powered up.

To restore power to the load devices after the REPO feature is activated, press the On button after the AC source is reconnected to the UPS.

> **IMPORTANT:** Pressing and holding the On button without utility present normally initiates a battery start and the UPS assumes the load. However, if the On button is pressed and a REPO is detected, battery start is inhibited and the UPS is not able to assume the load. The electronics module fan spins and the General Alarm LED and an audible alarm are active as long as the On button is held.

To power down the entire network in the event of an emergency, the REPO ports of multiple UPS units can be connected to a single switch.

ERM rear panel



Item	Description
1	Circuit breaker
2	ERM input connector (from another ERM output)
3	ERM output connector (to the UPS or another ERM)

Installation

Precautions

Save these instructions. This document contains important safety instructions that should be followed during installation, operation, and maintenance of the UPS and batteries.

⚠ **WARNING:** A risk of personal injury from electric shock and hazardous energy levels exists. The installation of options and routine maintenance and service of this product must be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with AC power products.

68 kg

150 lb

This symbol indicates that the UPS exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

75 kg

167 lb

This symbol indicates that the ERM exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

⚠ **WARNING:** To prevent personal injury from earth conductor leakage current:

- Do not operate the UPS while disconnected from the utility power source.
- Disconnect load devices before disconnecting the UPS from the utility power source.

Preparing to install the hardware

Before installing the hardware:

1. Be sure the necessary tools and materials (on page 11) are available.
2. Select an installation site ("Selecting a site" on page 12).
3. Prepare the equipment ("Readying the equipment" on page 12) for installation in the rack.

Tools and materials

The following tools are required for installation:

- Phillips screwdriver
- 10-mm hex-nut driver

The following items are supplied with the rack:

- Screws
- Hex nuts
- Cage nuts
- Cage nut-fitting tool

Selecting a site

WARNING: To prevent fire or electric shock, install the unit in a temperature- and humidity-controlled indoor environment, free of conductive contaminants.

When selecting a site, consider the following factors:

- Elevated operating ambient temperature—If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Install the equipment in an environment compatible with the operating temperature ("Environmental specifications" on page 47).
- Reduced air flow—In the rack, the rate of air flow required for safe operation of the equipment must not be compromised.
- Circuit overloading—Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable earthing—Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit, such as the use of power strips.
- Electrical requirements—All models require a dedicated (unshared) branch circuit, suitably rated for the specific UPS as stated in "Input specifications ("UPS input specifications" on page 44)" .

Readying the equipment

1. Check the battery recharge date specified on the label that is affixed to the shipping carton.

   IMPORTANT: Do not use the battery if the recharge date has passed. If the date on the battery recharge date label has passed without the battery being recharged, contact an HP authorized service representative for directions.

2. Transport the packaged unit to its installation location.
3. Unpack the equipment near the rack where the unit will be assembled.

   CAUTION: Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

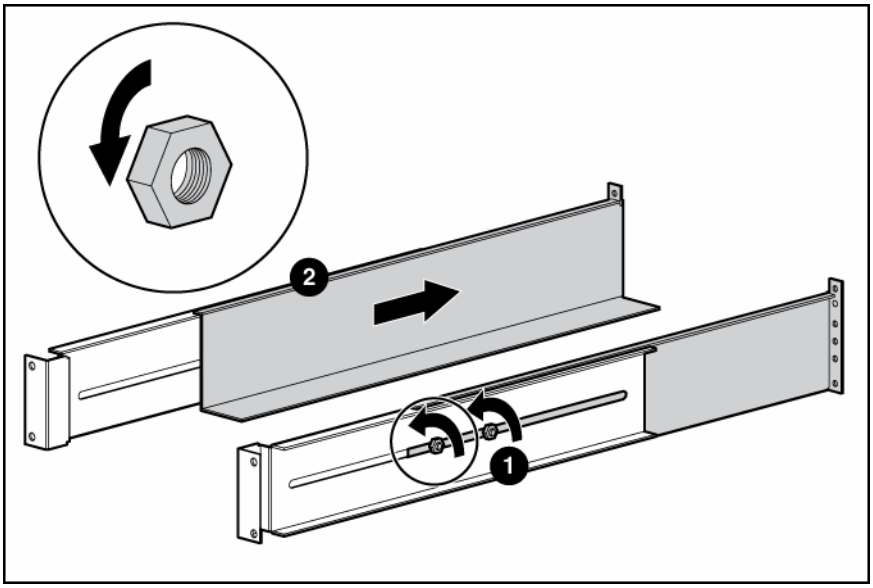
Installing the mounting rails

⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that:

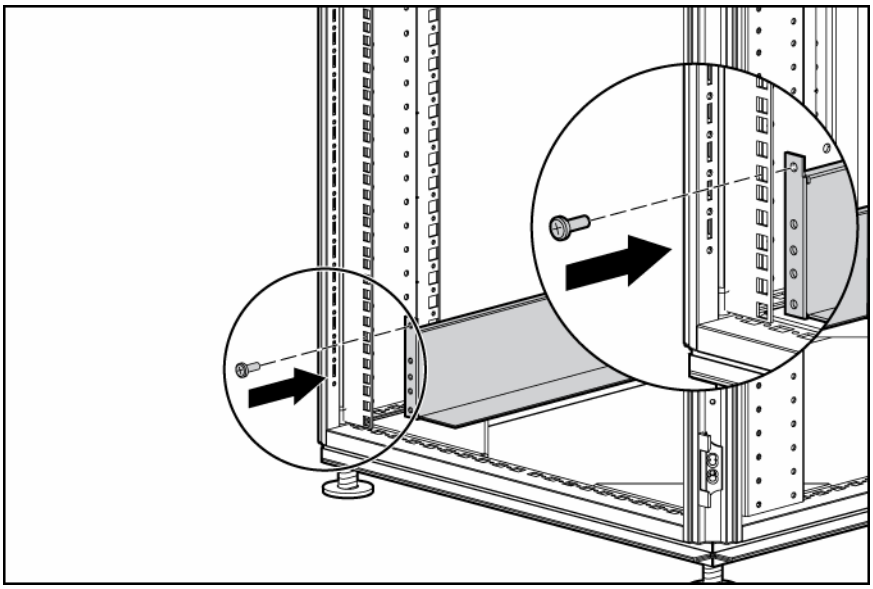
- The leveling feet are extended to the floor.
- The full weight of the rack rests on the leveling feet.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

NOTE: Mounting hardware for square- and round-holed racks is included in the UPS kit.

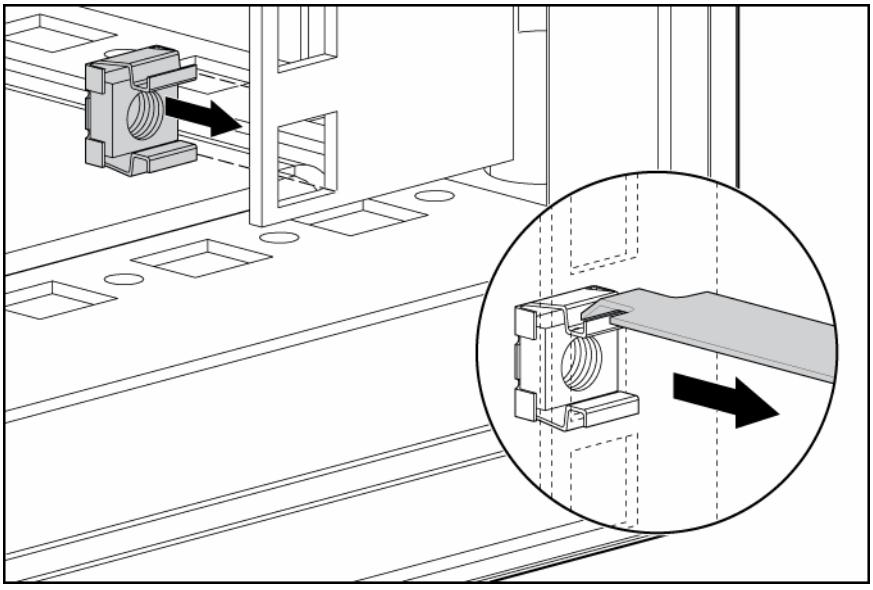
1. Loosen the hex nuts, and extend the brackets to the desired length.



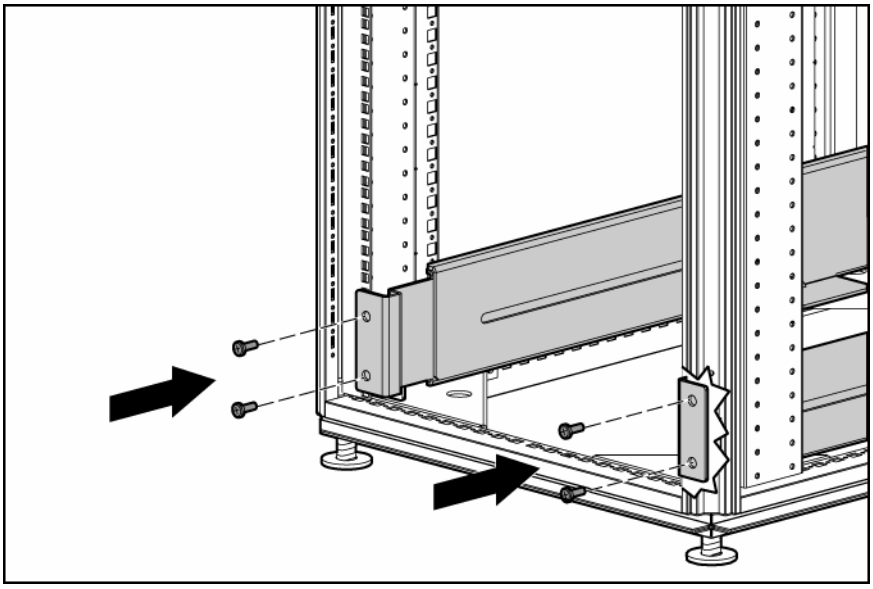
2. Insert screws through the rack into the mounting rail and the front of each mounting bracket.



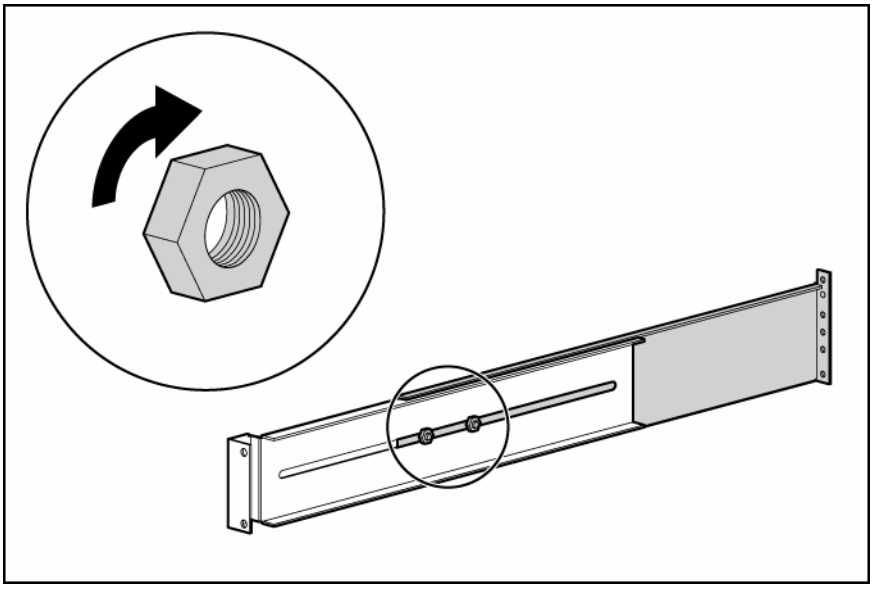
3. Install cage nuts or clip nuts into the rear of the rack.



4. Insert screws through the mounting rail into the cage nuts or clip nuts.



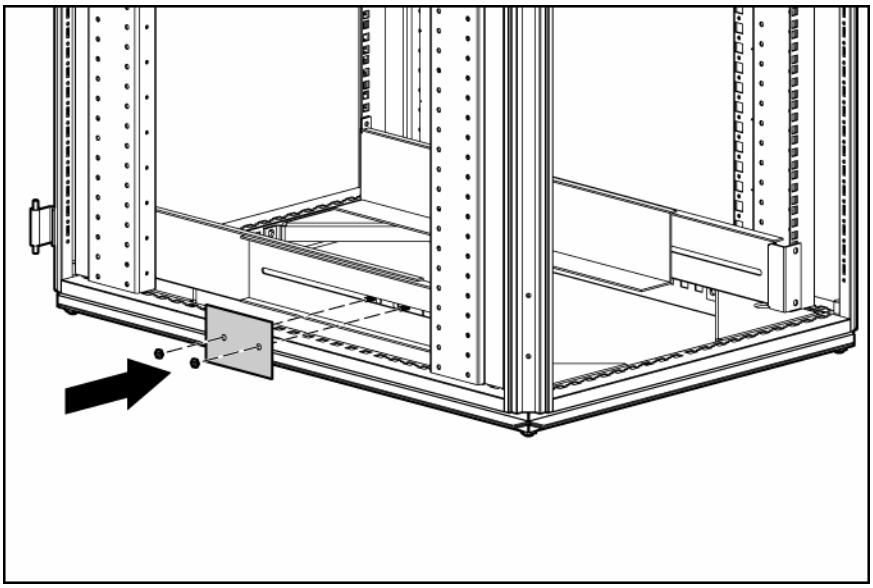
5. Tighten the hex nuts.



Preparing the rails for integrated shipping

If the unit is to be shipped in an HP 9000 or 10000 series rack:

1. Remove the hex nuts, flat washers, and lock washers from the mounting rail.
2. Install the rail reinforcement plates and tighten using the hex nuts with captive washers included in the kit, instead of the nuts included with the rail.
3. Install the rear mounting brackets using hex nuts. Wait until the unit is installed and the brackets are adjusted before tightening the nuts.



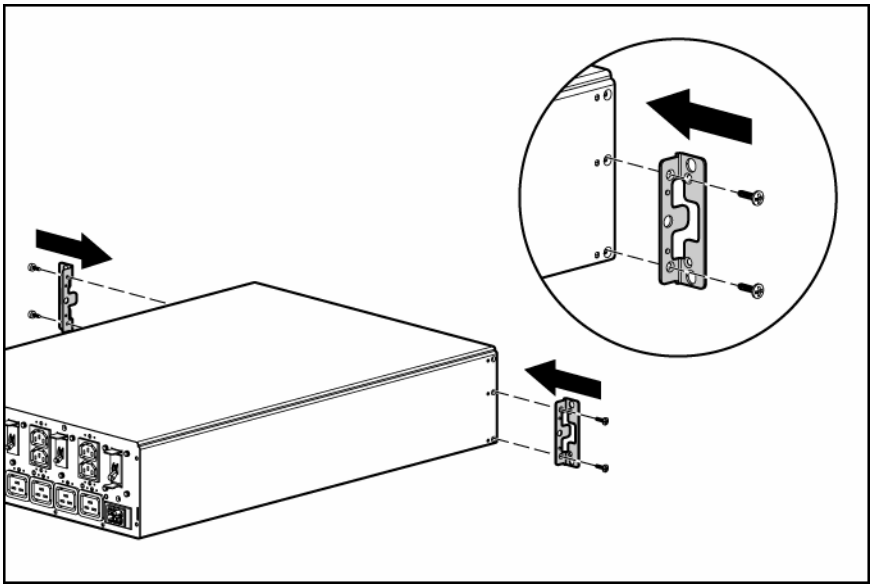
Installing the UPS

Before installing the UPS, review and observe all warnings in "Precautions (on page 11)."

WARNING: Uneven mechanical loading in the rack may cause a hazardous condition

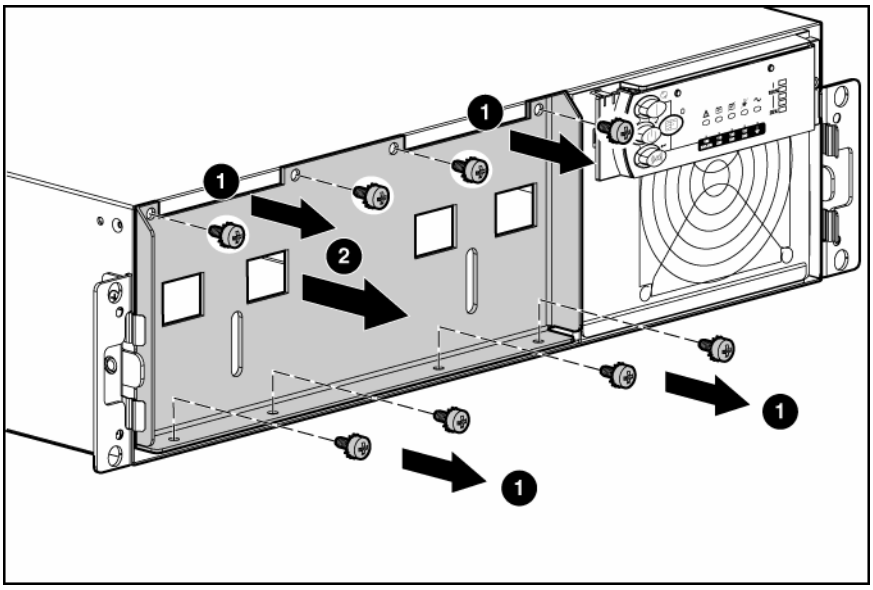
CAUTION: Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

1. Install the mounting rails ("Installing the mounting rails" on page 12).
2. With one person on each side of the carton, lift the chassis and lower it to the floor in front of the rack.
3. Install the mounting ears on the chassis using the screws provided.



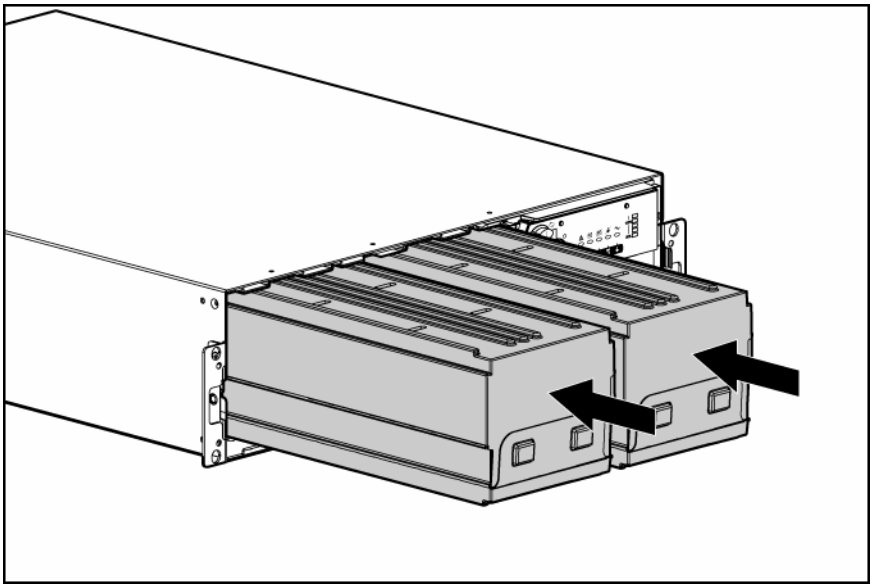
4. With one person on each side, lift the chassis to rail level and slide the chassis on the mounting rails.
5. Attach the chassis to the rack using the supplied screws.
6. If using the rear mounting brackets, be sure that the bracket tabs are fully inserted into the rear panel cutouts, then tighten the brackets.

Removing the UPS battery bracket

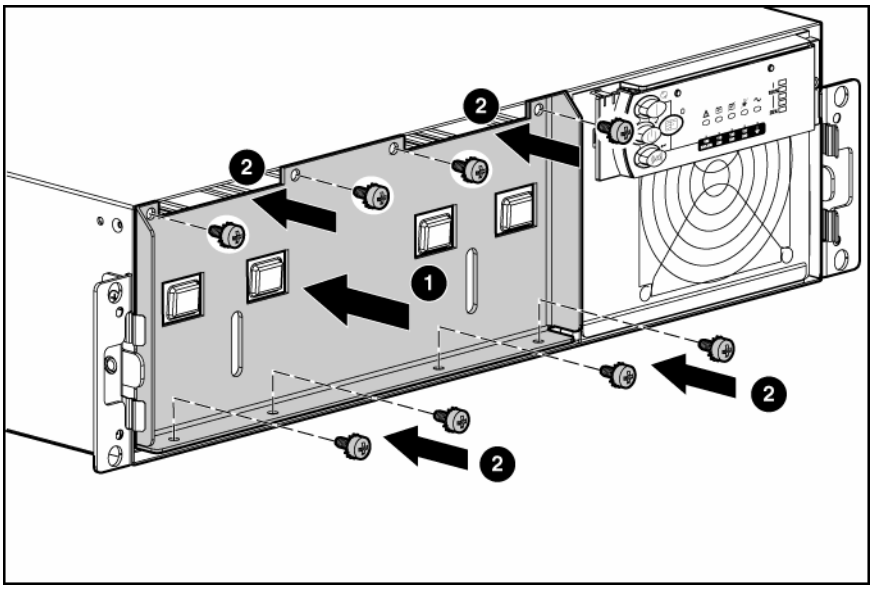


Installing the batteries

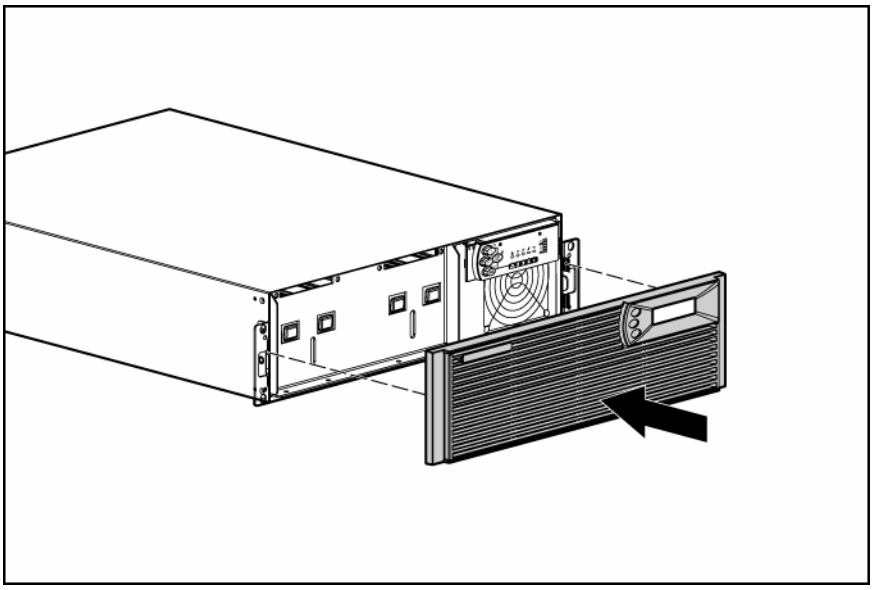
⚠ **WARNING:** To prevent personal injury, prepare the area and observe all materials-handling procedures when transporting a battery module. Battery modules weigh 20 kg (44 lb).



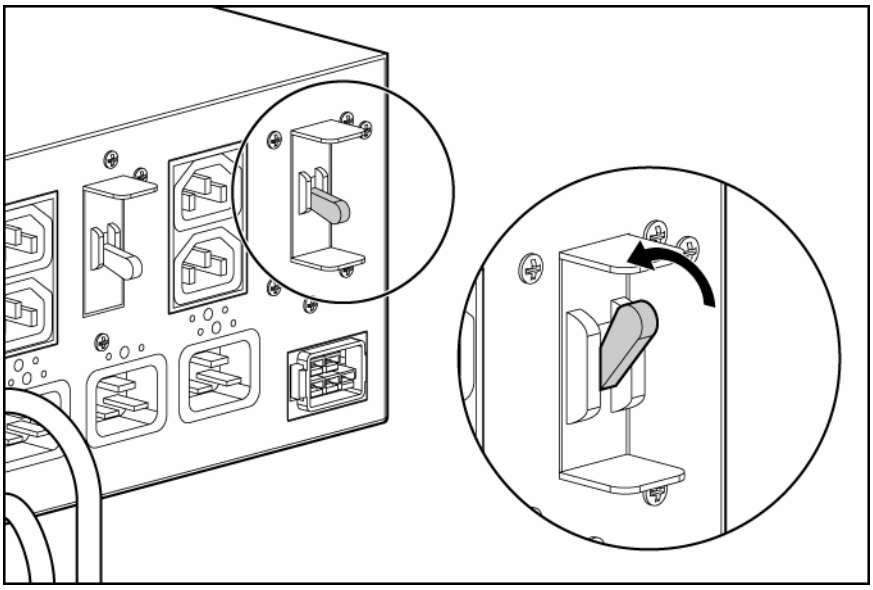
Replacing the UPS battery bracket



Attaching the UPS front bezel



Switching on the UPS battery circuit breaker

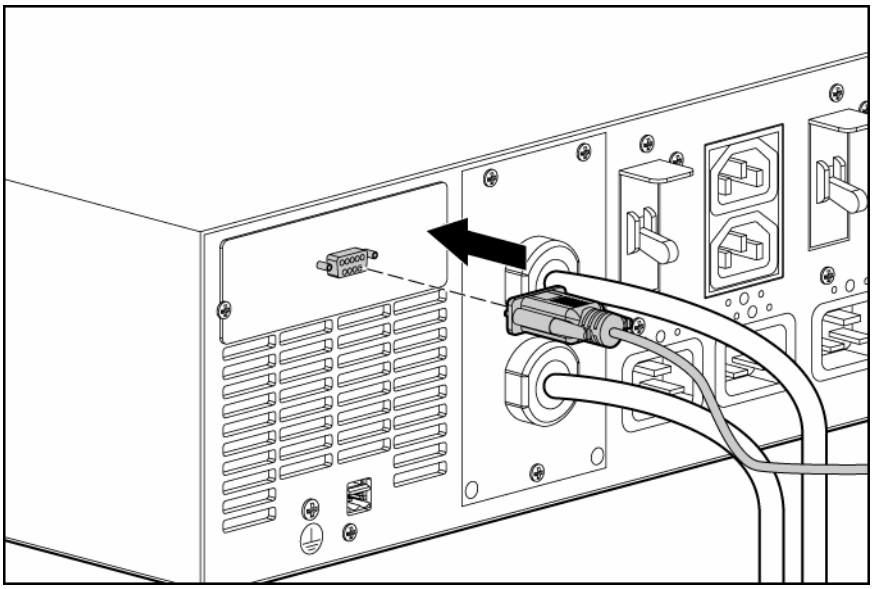


Connecting the serial communications port

CAUTION: Use only the computer interface cable supplied with the UPS to connect the communications port to the host computer.

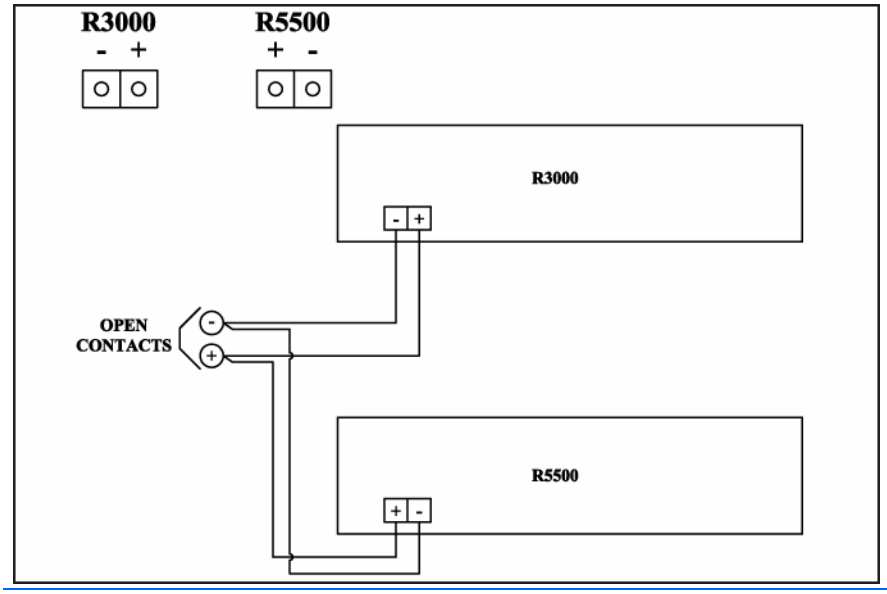
CAUTION: Using a USB to serial converter cable will damage the UPS.

IMPORTANT: Power management software requires the communications port to be appropriately cabled to the host computer.



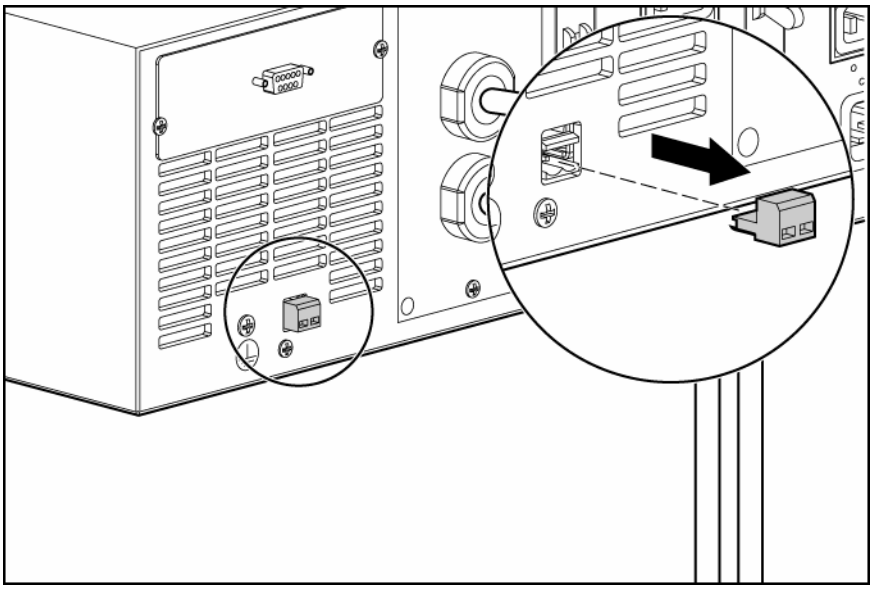
Connecting the REPO port

WARNING: The pins on the REPO port are polarity sensitive. Be sure to verify polarity while connecting the REPO port.



WARNING: To meet the requirements stated in NEC (NFPA 70) Articles 645-10 and 645-11, a UPS installed in a computer equipment room must be connected to a REPO circuit.

IMPORTANT: The remote switch must be in the Off (open) position to enable power to the output receptacles.

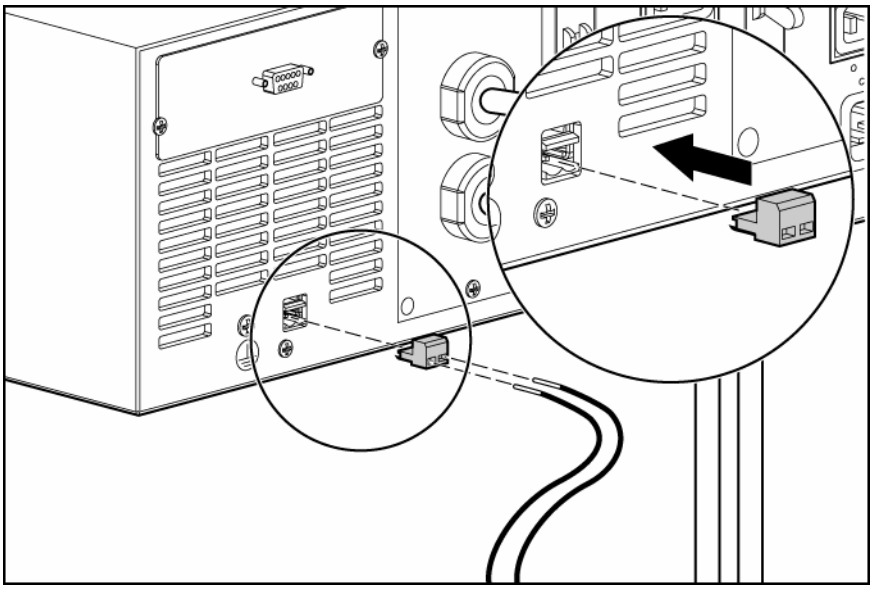


NOTE: Wire the connector block using stranded, nonshielded wire (AWG #22 - #18, or equivalent).

Separate wire pairs are attached to a single, normally-open contact in a parallel connection. HP recommends using different colors for the positive and negative wires.

If a connector becomes disconnected and is reconnected with reversed polarity, a REPO is initiated. To avoid REPO port disconnect:

- Minimize wire strain while connecting the REPO port.
- Avoid allowing the wires to hang in the rear of the UPS.
- Use tie wraps and tie wrap blocks to secure the wires tightly to the rack and the rear of the UPS.



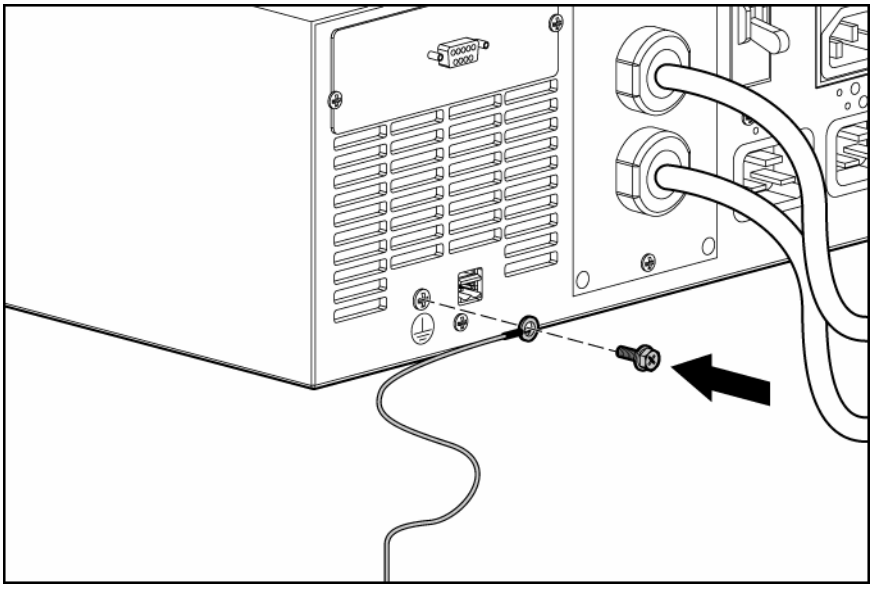
For more information about the REPO port, see "REPO port (on page 9)" .

For information about verifying the REPO connection, see "Verifying the REPO port connection (on page 30)" .

Connecting the ground bonding cable

The ground bonding screw is provided as an attachment point for conductors. Use a ground bonding cable if the rack contains any conductors for the purpose of functional grounding or bonding of ungrounded metal parts.

The ground bonding cable is not included.



Connecting the UPS to utility power

WARNING: To prevent injury from electric shock or damage to the equipment:

- Plug the input line cord into a grounded (earthed) electrical outlet that is installed near the equipment and is easily accessible.
- Do not disable the grounding plug on the input line cord. The grounding plug is an important safety feature.
- Do not use extension cords.

Connect the UPS to a grounded utility power outlet. When the UPS is plugged in, it automatically enters Standby mode and begins charging the batteries.

Connecting devices to the UPS

CAUTION: Do not plug laser printers into the UPS output receptacles. The instantaneous current drawn by this type of printer can overload the UPS.

Before connecting devices:

- Verify that the UPS will not overload by checking that the ratings of the devices do not exceed the UPS capacity.
- Evenly distribute connected devices to both circuit breakers. See "UPS output specifications (on page 44)" for the maximum current rating for each receptacle.

After verifying that the UPS will not overload:

1. Turn on the circuit breakers for load segments 1 and 2.

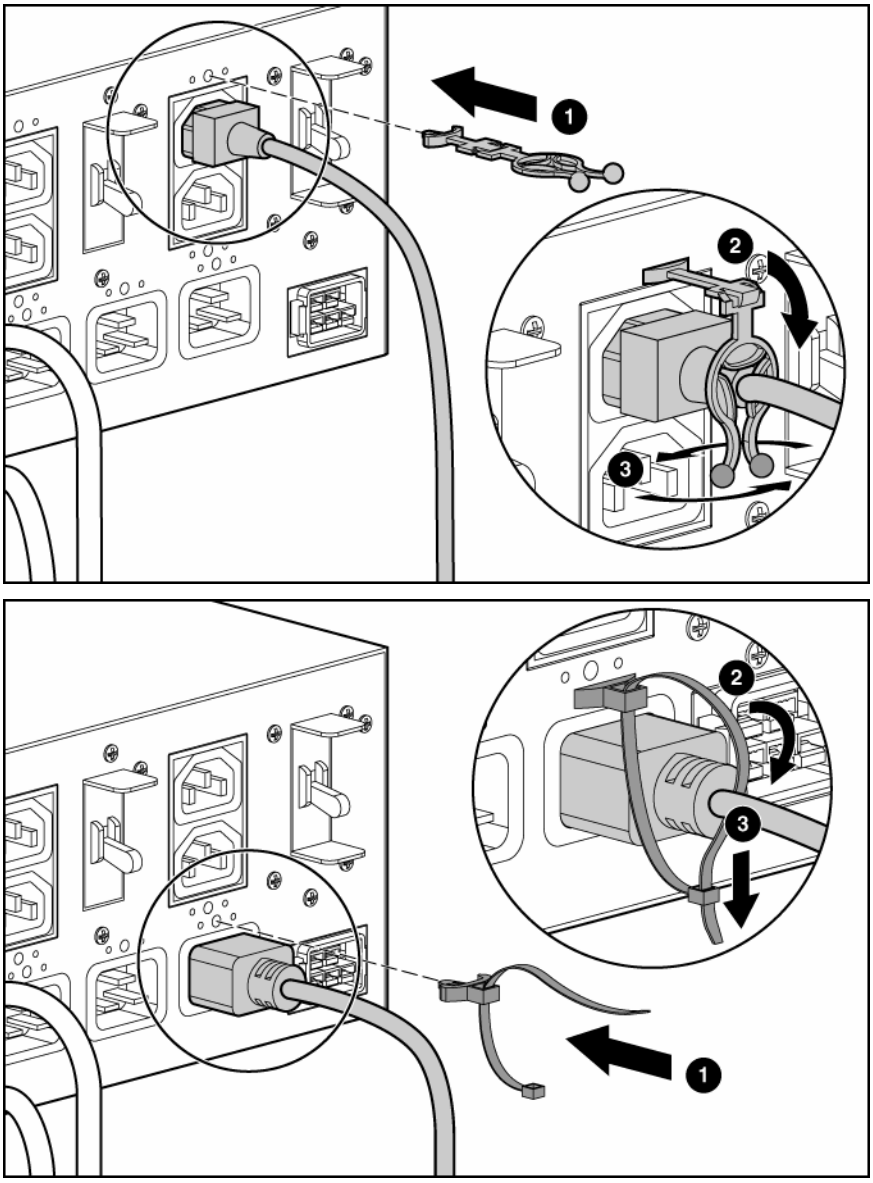
   NOTE: The circuit breaker for load segment 1 protects the C19 and C13 outlets but not the large output receptacle.

2. Connect the device power cords to the appropriate output receptacles on the rear panel of the UPS.

To provide additional receptacles:

- Plug a PDU or other device into the high current, large output receptacle. The large output receptacle is part of load segment 1 and can be turned off and on using power management software (on page 31).
- Plug an extension bar into any IEC-320-C19 receptacle to yield eight additional IEC-320-C13 receptacles.

Connecting the UPS cord retention clips



Charging the UPS batteries

With the UPS in Standby mode, allow the batteries to charge before putting the UPS into service.

IMPORTANT: Charge the batteries for at least 24 hours before supplying backup power to devices. The batteries charge to:

- 80 percent of their capacity within 3 hours
- 100 percent of their capacity within 48 hours

Starting power to the load

Start power to the load by placing the UPS in Operate mode (on page 27).

IMPORTANT: AC power must be available the first time the UPS is started.

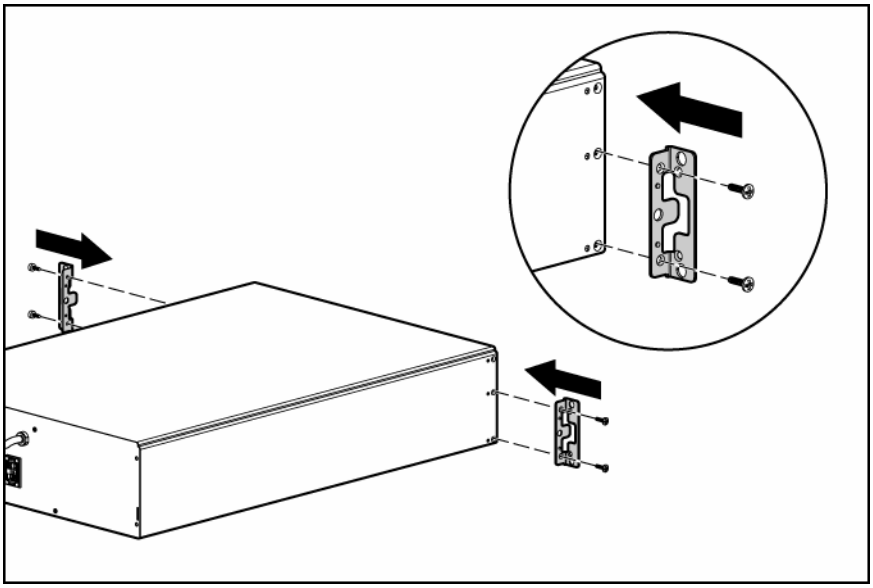
Installing the ERM

Before installing the ERM, review and observe all warnings in "Precautions (on page 11)."

WARNING: Uneven mechanical loading in the rack may cause a hazardous condition

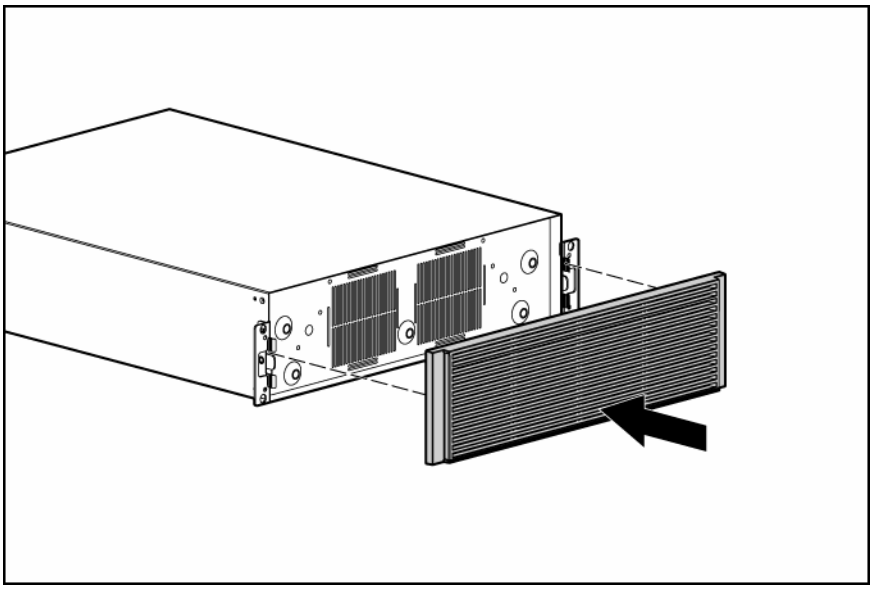
CAUTION: Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

1. Install the mounting rails ("Installing the mounting rails" on page 12).
2. With one person on each side of the carton, lift the chassis and lower it to the floor in front of the rack.
3. Install the mounting ears on the chassis using the screws provided.



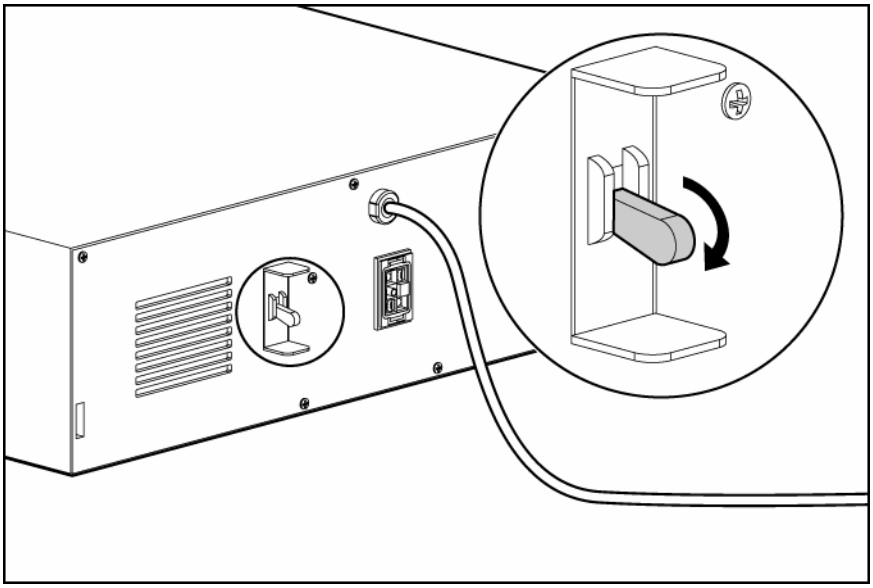
4. With one person on each side, lift the chassis to rail level and slide the chassis on the mounting rails.
5. Attach the chassis to the rack using the supplied screws.
6. If using the rear mounting brackets, be sure that the bracket tabs are fully inserted into the rear panel cutouts, then tighten the brackets.

Attaching the ERM front bezel

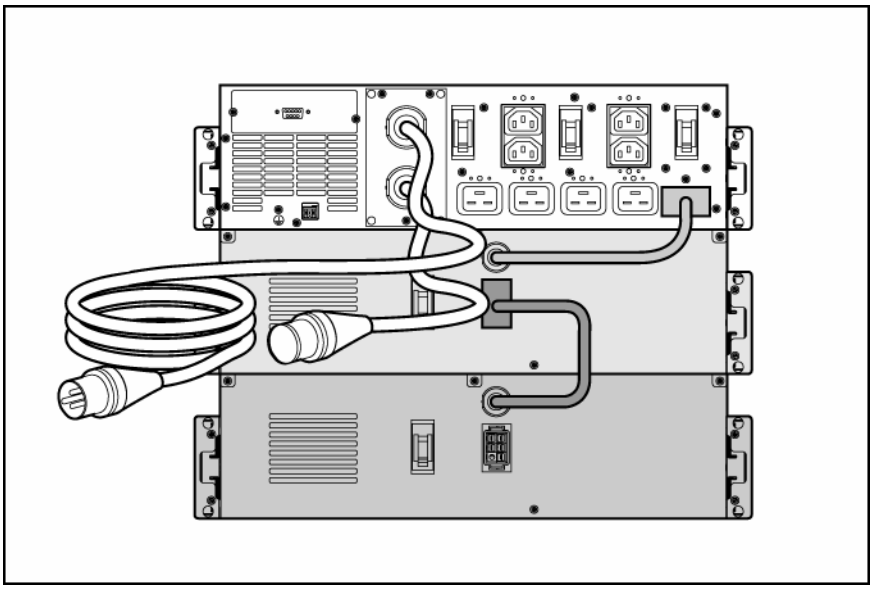


Switching off the ERM circuit breaker

WARNING: To prevent personal injury from electric shock or damage to the equipment, verify that the circuit breaker is in the Off position.

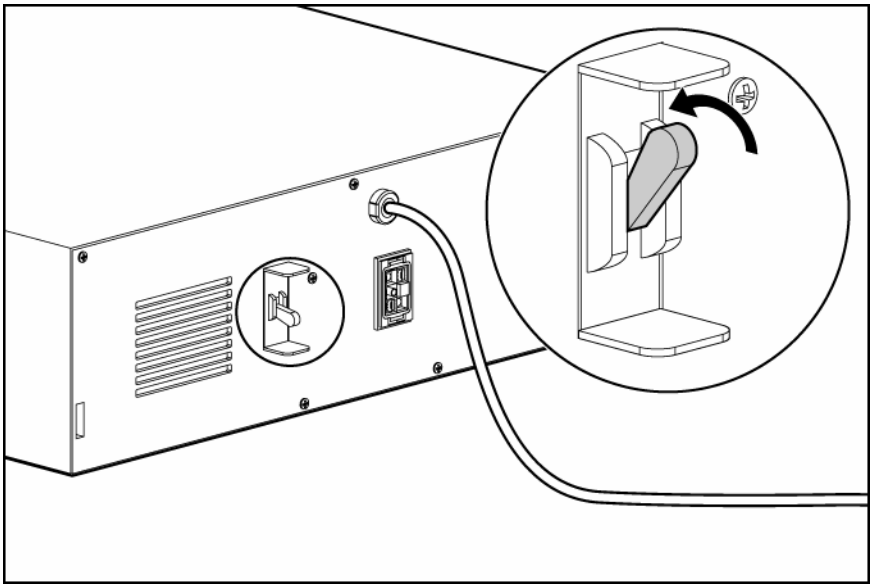


Connecting the ERM to the UPS



NOTE: To install a second ERM, plug the cable from the second ERM into the socket at the rear of the first ERM. Up to two ERM units can be connected.

Switching on the ERM circuit breaker



Charging the ERM batteries

Connect the UPS to a grounded utility power outlet. When the UPS is plugged in, it automatically enters Standby mode and begins charging the ERM batteries. With the UPS in Standby mode, allow the ERM batteries to charge for at least 24 hours before putting the UPS into service.

△ **CAUTION:** To ensure maximum runtime, be sure to configure the UPS ("Configuring the UPS" on page 28) for the number of installed ERMs using the UPS front panel controls.

UPS operations

Modes of operation

The UPS has four modes of operation:

- Standby mode (on page 27)
- Operate mode (on page 27)
- Configure mode (on page 28)
- Auto-Bypass mode (on page 28)

Standby mode

In Standby mode:

- No power is available at the UPS output receptacles.
- The UPS charges the batteries as necessary.

The UPS can be placed in Standby mode when the UPS is in Operate mode (on page 27).

To place the UPS in Standby mode, press and hold the Standby button until the audible alarm sounds and the Utility LED flashes. Power to the load ceases.

IMPORTANT: While in Standby mode, the UPS maintains the charge on the batteries, but no power is available at the output receptacles. The UPS remains in Standby mode until an alternate mode is selected or until utility power is removed.

For the location of buttons, see "UPS front panel controls (on page 7)."

For the location of LEDs, see "UPS front panel LED indicators (on page 8)."

Operate mode

In Operate mode:

- Power is available at the UPS receptacles.
- The UPS charges the batteries as necessary.

The UPS can be placed in Operate mode if either of the following conditions apply:

- The UPS is powered up and in Standby mode (on page 27).
- The UPS is powered down and no utility power is available.

To place the UPS in Operate mode, press the On button. The Utility LED turns solid green, indicating that power is available at the UPS output receptacles. The UPS acknowledges compliance with a short beep.

NOTE:

- If the UPS is using battery power (no utility power is present and the Utility LED is red), press and hold the On button until the audible alarm sounds.
- If the UPS is off (no LEDs are illuminated), press the On button to start the UPS on battery power.

For the location of buttons, see "UPS front panel controls (on page 7)."

For the location of LEDs, see "UPS front panel LED indicators (on page 8)."

Configure mode

In Configure mode:

- Power is available at the UPS receptacles.
- The UPS charges the batteries as necessary.
- The UPS configuration can be updated.

The UPS can be placed in Configure mode while in Operate mode (on page 27) or Standby mode (on page 27).

To place the UPS in Configure mode:

1. Remove the front bezel ("Removing the UPS front bezel" on page 32).
2. Press and hold the Configure button until the front panel LEDs flash in unison and the Configure Mode On LED illuminates solid green.

For the location of buttons, see "UPS front panel controls (on page 7)."

For the location of LEDs, see "UPS front panel LED indicators (on page 8)."

Auto-Bypass mode

The UPS automatically enters Auto-Bypass mode when either of the following conditions occurs:

- The power from the UPS reaches a percentage greater than 110 percent for more than 10 cycles or between 103 percent and 110 percent for more than 2 minutes.
- The UPS electronics module fails or is removed.

Configuring the UPS

In Configure mode, the LED front panel display changes function to enable modification of the UPS parameters. Each LED is associated with a different parameter.

Available settings	Parameter	Associated LED	Explanation (when LED is illuminated)
Nominal Voltage Setting	200/208 Nom	General Alarm (red)	Nominal utility voltage level is set to 200/208 VAC (factory default for 326529-D71)
	220 Nom	On Battery (red)	Nominal utility voltage level is set to 220 VAC

Available settings	Parameter	Associated LED	Explanation (when LED is illuminated)
	230 Nom	Battery Fault (red)	Nominal utility voltage level is set to 230 VAC (factory default for 326529-B31)
	240 Nom	Site Wiring Fault (red)	Nominal utility voltage level is set to 240 VAC
Wiring Fault Setting	Wiring Fault	Utility (green)	Audible alarm sounds when ground is missing or line and neutral connections are reversed
ERM Setting	0 ERMs	0% to 25% load (green)	UPS is configured for no attached ERMs (factory default)
	1 ERM	26% to 50% load (green)	UPS is configured for 1 attached ERM
	2 ERMs	51% to 75% load (green)	UPS is configured for 2 attached ERMs

To change the UPS configuration parameters:

1. Place the UPS in Configure mode (on page 28).

   The LEDs associated with the currently configured parameters illuminate. A flashing green cursor indicates where you are in the configuration process as you scroll through the available settings.
2. To change the nominal voltage, press the On button to advance the cursor to the LED associated with the appropriate nominal voltage parameter. The selected voltage configuration LED flashes.
3. Press the Standby button to select the nominal voltage configuration. The LED associated with the old input voltage parameter turns off, and the LED associated with the new input voltage parameter illuminates solid green.

   NOTE: Only one nominal utility voltage can be configured. When setting voltage configuration parameters, selecting an On value for any one parameter automatically sets the other possibilities to Off.
4. To enable the Wiring Fault parameter, press the On button to advance the cursor to the Utility LED, then press the Standby button. The LED illuminates solid green. This parameter is disabled by default, and should only be enabled for line-to-neutral connections. Enabling this feature for line-to-line power sources causes a false alarm.
5. To configure the UPS for the number of connected ERMs, press the On button to advance the cursor to the load LED associated with the number of ERMs attached to the UPS.
6. Press the Standby button to select the appropriate ERM configuration. The associated LED illuminates solid green.
7. To save the configuration settings and exit Configure mode, press the Test/Alarm Reset button.

   NOTE: Configure mode times out after 2 minutes. If the Test/Alarm Reset button has not been pressed, any new selections are not saved.

Testing the LEDs

To test the LEDs, press and hold the Test/Alarm Reset button for 3 seconds.

Silencing an audible alarm

To silence an alarm, press the Test/Alarm Reset button ("UPS front panel controls" on page 7).

IMPORTANT:

- Although the audible alarm silences, the condition that caused the alarm to sound may still exist.
- If a utility power failure caused the alarm (the Utility LED or the General Alarm LED illuminates red), the alarm silences after power is restored.

For information about audible alarm conditions, see "LED and audible alarm troubleshooting (on page 39)."

Verifying the REPO port connection

NOTE: While testing, operate connected equipment in a safe test mode so the effects do not disrupt critical operations.

After connecting the REPO port (on page 20):

1. Initiate a REPO by closing the REPO contact.

   The General Alarm LED and Utility LED ("UPS front panel LED indicators" on page 8) flash.

CAUTION: If the polarity is reversed while connecting the REPO port, the UPS powers up normally.

2. Verify proper connection of the REPO port:
   a. Power up the UPS ("Starting power to the load" on page 24).
   b. Disconnect the REPO port.
   c. Reconnect the REPO port.

      If the polarity is correct, the REPO connectors can be disconnected, and then reconnected, without initiating a REPO.
   d. Verify that the UPS remains in Operate mode (on page 27).
   e. If a REPO is initiated, the polarity is reversed. Check and correct the connections.

Powering down the UPS

1. Shut down all load devices.
2. Press the Standby button to take the UPS out of Operate mode. Power to the load receptacles ceases.
3. Disconnect the UPS from utility power.
4. Wait at least 60 seconds for the UPS internal circuitry to discharge.

Power management

Power management software

HP Power Manager software ensures maximum power reliability of computer systems through comprehensive control of UPSs. The easy-to-use browser interface enables novice users to configure and manage power protection settings. To download the latest version of HP Power Manager software, see the HP website (http://www.hp.com/go/rackandpower).

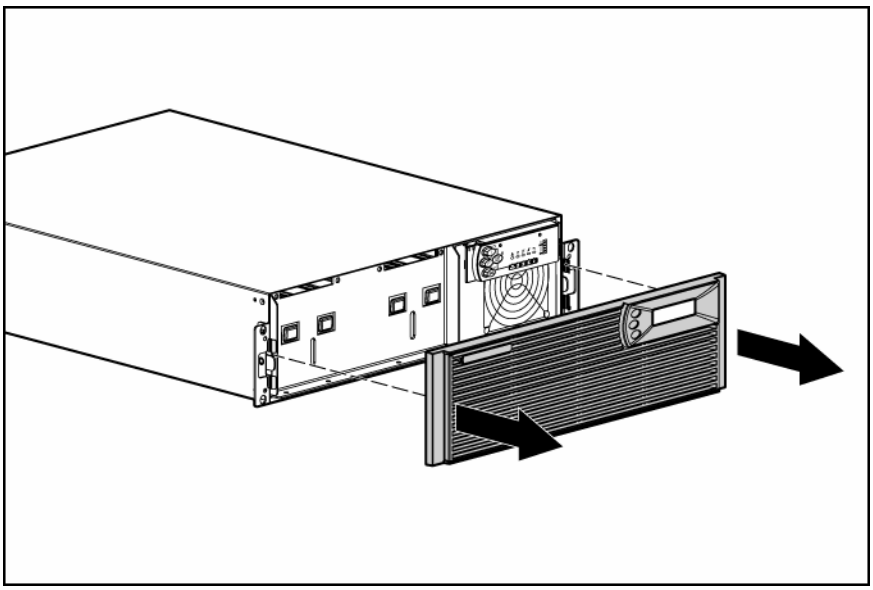
> **NOTE:** To install and configure the software, see the software user guide. The software user guide is available for download from the HP website (http://www.hp.com/go/rackandpower).

HP Power Manager:

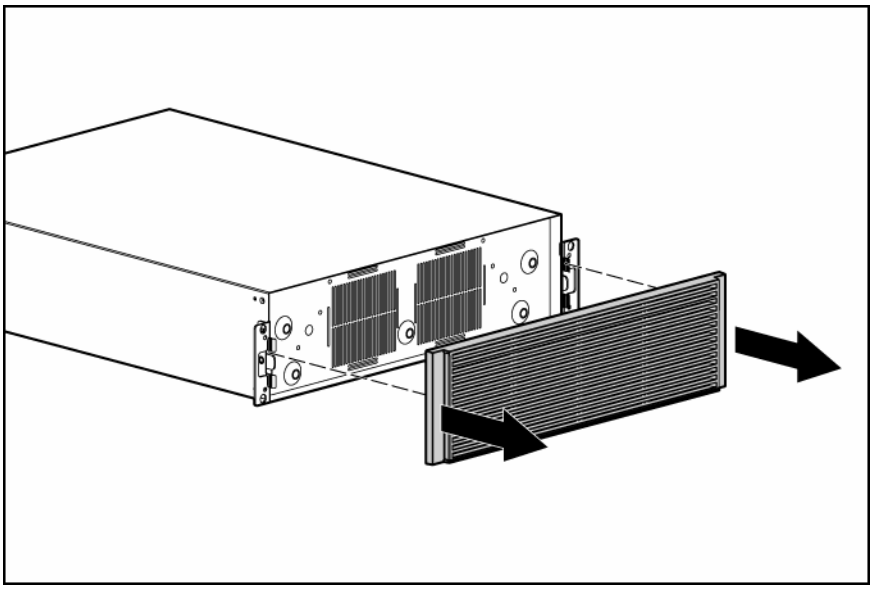
- Does not require complex management systems, which simplifies deployment, configuration, and management of UPS-protected environments.
- Manages a graceful shutdown of attached devices during utility power failures.
- Prioritizes the timing of attached load device shutdowns.
- Shuts down and reboots any UPS and attached load devices based on a user-specified schedule.
- Customizes alert generation with modifiable dialog boxes, command execution, and email and broadcast messages.
- Monitors the status of the UPS and reports alarms.
- Displays a power log for analysis.
- Manages independent UPS load segments to provide separate power control of attached load devices.
- Delays reboot by load segment after a power outage to sequence the startup of system components.

Maintenance

Removing the UPS front bezel



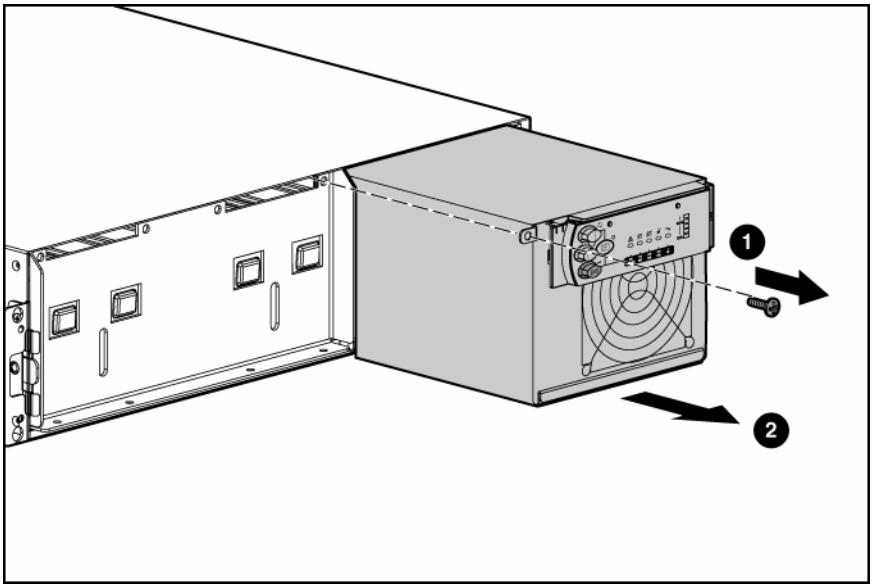
Removing the ERM front bezel



Replacing the UPS electronics module

This component is hot-swappable and can be replaced without powering down the UPS.

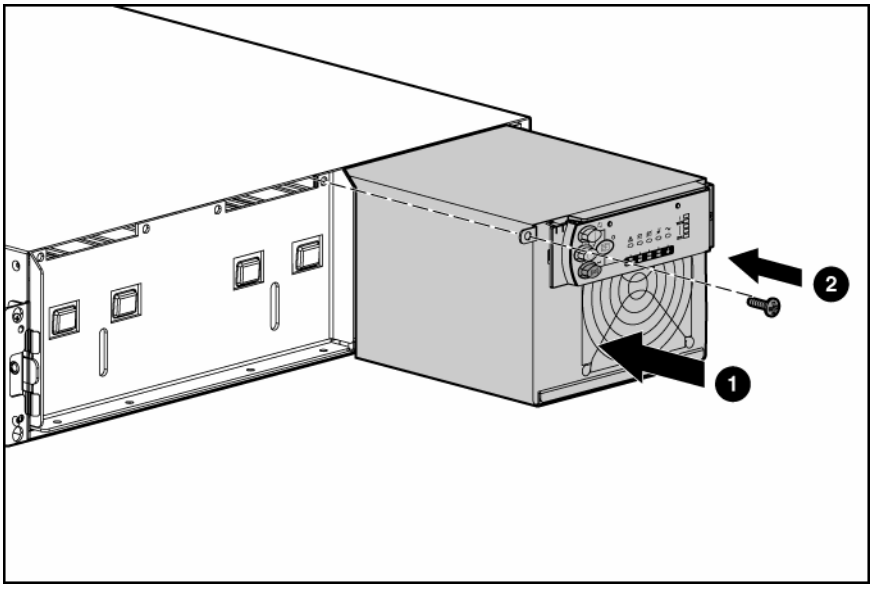
1. (optional) To replace the component with the UPS powered down, refer to "Powering down the UPS (on page 30)."
2. Disconnect the communications cable from the option card.
3. Remove the option card ("Replacing the UPS option card" on page 34).
4. Remove the UPS front bezel ("Removing the UPS front bezel" on page 32).
5. Remove the screw securing the electronics module and slide the module out.



△ **CAUTION:** To avoid dropping the load while hot-swapping the electronics module, press and hold the Test/Alarm Reset button until the electronics module is firmly seated in the connector, and the Load Bar LED is illuminated.

6. Replace the electronics module while holding down the Test/Alarm Reset button. Do not release the button until the electronics module is firmly seated in the connector, and the Load Bar LED is illuminated.

7. Replace the screw.

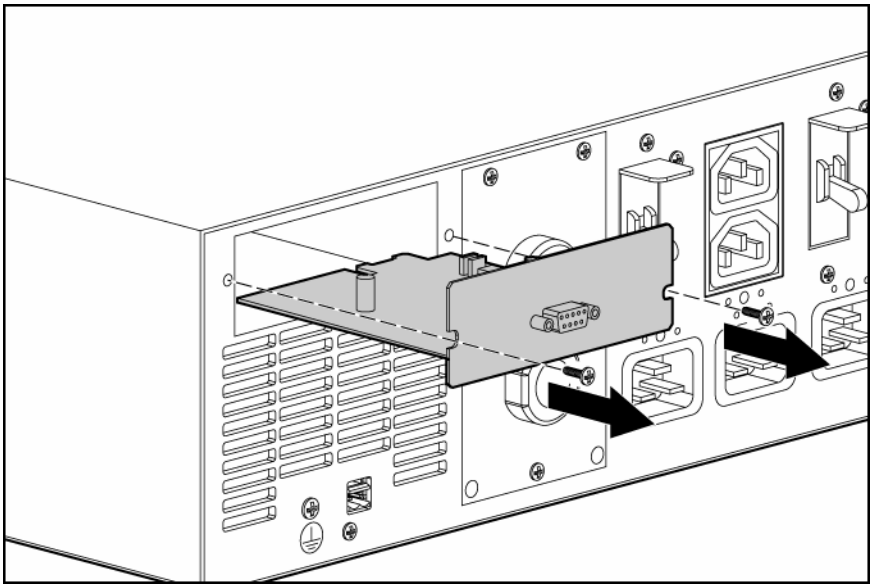


8. Replace the option card.
9. Reconnect the external cable to the card.
10. Verify that the UPS is configured to the proper voltage and number of attached ERMs. See "Configuring the UPS (on page 28)."
11. Replace the front bezel.

Replacing the UPS option card

This component is hot-swappable and can be replaced without powering down the UPS.

1. (optional) To replace the component with the UPS powered down, refer to "Powering down the UPS (on page 30)."
2. Disconnect the communications cable from the option card.
3. Remove the two screws securing the option card and slide the card out.



To replace the component, reverse the removal procedure.

NOTE: Replacing the option card might require power management software to be restarted or reconfigured.

Replacing the batteries

To replace the batteries:

1. Read and observe the requirements in "Important battery safety information (on page 35)" and "Battery care and storage guidelines (on page 35)."
2. Follow the instructions in "UPS battery replacement procedure (on page 36)."

Important battery safety information

WARNING: The unit contains sealed lead-acid battery modules. To prevent fire or chemical burns:

- Do not attempt to recharge batteries after removal from the unit.
- Do not disassemble, crush, or puncture the batteries.
- Do not short the external contacts of the batteries.
- Do not immerse the batteries in water.
- Do not expose to temperatures higher than 60°C (140°F).

WARNING: To prevent personal injury from hazardous energy:

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Do not place tools or metal parts on top of batteries.

WARNING: To prevent personal injury, prepare the area and observe all materials-handling procedures when transporting a battery module. Battery modules weigh 20 kg (44 lb).

NOTE: Replace all battery modules at the same time.

Battery care and storage guidelines

- Minimize the amount of time the UPS uses battery power by matching the UPS configuration with the utility voltage. Refer to "Configuring the UPS (on page 28)."
- Keep the area around the UPS clean and dust-free. If the environment is very dusty, clean the outside of the UPS regularly with a vacuum cleaner.
- Maintain the ambient temperature at 25°C (77°F).
- If storing a UPS for an extended period, recharge the batteries every 6 months:

CAUTION: Because of the short shelf life of the batteries, avoid storing a battery spare as a backup. Do not maintain an inventory of spare batteries on site unless a procedure to keep these batteries charged while in storage is implemented.

a. Connect the UPS to utility power.
b. Allow the UPS to remain in Standby mode.
c. Allow the UPS to charge the batteries for at least 24 hours.
d. Update the battery recharge date label.

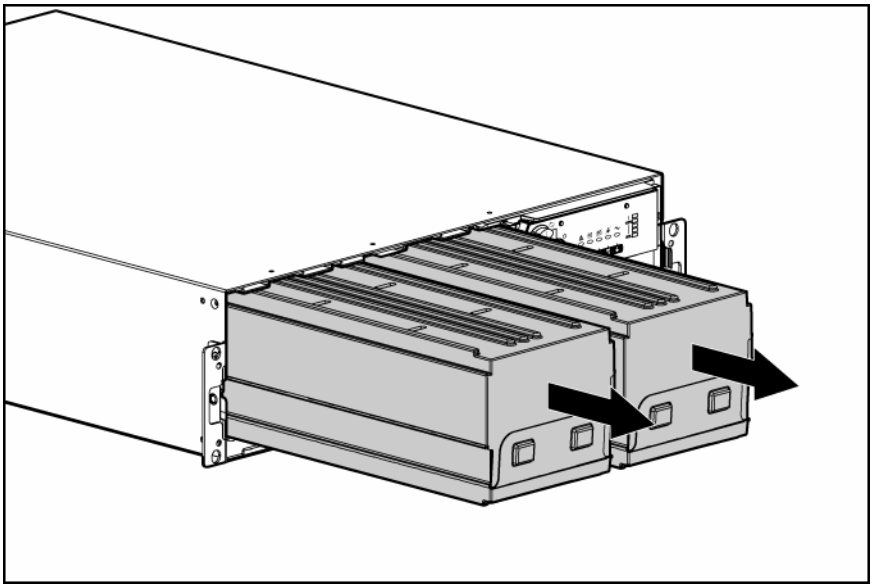
UPS battery replacement procedure

This component is hot-swappable and can be replaced without powering down the UPS.

1. (optional) To replace the component with the UPS powered down, refer to "Powering down the UPS (on page 30)."

CAUTION: When hot-swapping batteries, the UPS is not protected in the event of a utility power failure, unless at least one ERM is installed.

2. Remove the UPS front bezel ("Removing the UPS front bezel" on page 32).
3. Remove the UPS battery bracket ("Removing the UPS battery bracket" on page 17).
4. Remove the UPS battery modules.



To replace the component, reverse the removal procedure.

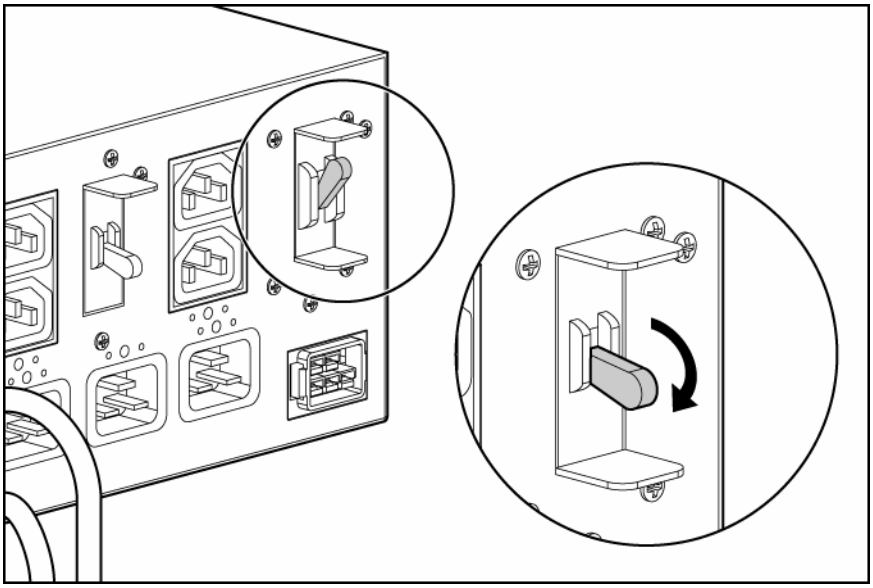
IMPORTANT: Charge the batteries for at least 24 hours before supplying backup power to devices. The batteries charge to:

- 80 percent of their capacity within 3 hours
- 100 percent of their capacity within 48 hours

Replacing the UPS

To remove the UPS:

1. Power down all attached load devices.
2. Power down the UPS ("Powering down the UPS" on page 30).
3. Switch the circuit breaker for any attached ERMs to the Off (down) position.
4. Switch the battery circuit breaker for the UPS to the Off (down) position.



5. Unplug the UPS power cord.
6. Disconnect the communications cable from the option card.
7. Disconnect the ground bonding cable.
8. Disconnect the REPO port.
9. Unplug the load devices.
10. Unplug all connected extension bars and PDUs.
11. Unplug the ERM connected to the UPS.
12. Remove the UPS front bezel ("Removing the UPS front bezel" on page 32).
13. Remove the UPS battery bracket ("Removing the UPS battery bracket" on page 17).
14. Remove the UPS battery modules.
15. Remove the screws securing the UPS to the rack.
16. Remove the UPS from the rack.

To replace the component, reverse the removal procedure.

Replacing the ERM

To remove the ERM:

1. Switch the circuit breaker for any attached ERMs to the Off (down) position.
2. Unplug the ERM from the back of the UPS.

3. Unplug the ERM from a second connected ERM.
4. Remove the front bezel ("Removing the ERM front bezel" on page 32) on the ERM that is being replaced.
5. Remove the screws securing the ERM to the rack.
6. Remove the ERM from the rack.

To replace the component, reverse the removal procedure.

Updating the UPS firmware

CAUTION: Using a USB to serial converter cable will damage the UPS.

To update the UPS firmware, see the HP website (http://www.hp.com/go/rackandpower).

Troubleshooting

LED and audible alarm troubleshooting

General Alarm LED	On Battery LED	Battery Fault LED	Site Wiring Fault LED	Utility LED	Overload LED	Audible alarm	Can alarm be silenced ("Silencing an audible alarm" on page 30)?	Condition
Off	Off	Off	Off	Green	Off	No audible alarm	N/A	UPS is in Operate mode (on page 27)
Off	Off	Off	Off	Flashing green	Off	No audible alarm	N/A	UPS is in Standby mode (on page 27)
Off	Off	Off	Off	Red	Off	On—1 beep every 5 seconds	Yes	UPS is in Auto-Bypass mode (on page 28)
Flashing red	Off	Off	Off	Red	Off	On—1 beep every 5 seconds	Yes	General alarm condition—UPS is in Auto-Bypass mode ("General alarm condition" on page 40)
Off	Off	Off	Off	Flashing red	Off	On—1 beep every 5 seconds	Yes	Bypass is out of range (on page 40)
Off	Off	Flashing red	Off	Off	Off	On—1 beep every 5 seconds	Yes	Battery test failure ("Battery condition" on page 40)
Off	Flashing red	Off	Off	Off	Off	On—1 beep every 5 seconds	No	Low battery—No utility power ("UPS is on battery" on page 43)
Off	Off	Flashing red	Off	Off	Off	On—1 beep every 5 seconds	Yes	Batteries are disconnected ("Battery condition" on page 40)
Off	Red	Off	Off	Off	Off	On—1 beep every 5 seconds	Yes	On battery—No utility power ("UPS is on battery" on page 43)
Off	Flashing red	Off	Off	Flashing red	Off	On—1 beep every 5 seconds	Yes	On battery—Input voltage is out of range (on page 41)
Flashing red	Flashing red	Flashing red	Flashing red	Flashing red	Flashing red	On—Continuous	No	Internal UPS fault condition (on page 41)

Red	Off	Off	Off	Off	Off	On—Continuous	Yes	Battery condition (on page 40)
Flashing red	Off	Off	Off	Flashing green	Off	On—Continuous	Yes	REPO condition (on page 42)
Off	Off	Off	Red	Off	Off	On—1 beep every 5 seconds	Yes	Site wiring condition (on page 42)
Flashing red	Off	Off	Off	Off	Red	On—Continuous	Yes	UPS power capacity is exceeded ("Overload condition" on page 42)

For the location of individual LEDs, see "UPS front panel LED indicators (on page 8)."

Battery condition

Action:

1. Install the battery module. If the battery module is already installed, remove and reinsert the module.
2. Allow the UPS batteries to charge for 48 hours.
3. If the LED does not turn off, replace the batteries ("UPS battery replacement procedure" on page 36).
4. If the condition persists, contact an HP authorized service representative.

Bypass is out of range

The input voltage is not within ±12 percent of nominal voltage.

The UPS is receiving utility power that might be unstable or in brownout conditions. The UPS continues to supply power to the connected equipment. If conditions worsen, the UPS might switch to battery power.

Action:

1. Check the input voltage and reconfigure the UPS ("Configuring the UPS" on page 28).
2. Contact a qualified electrician to verify that the utility power is suitable for the UPS.

General alarm condition

Action:

1. If power management software is being used, check the log files to obtain specific error information to help identify the problem.

   For more information about the causes of a general alarm condition, see the HP Power Manager user guide available for download from the HP website (http://www.hp.com/go/rackandpower).
2. Check the batteries:
   a. Allow the UPS batteries to charge for 48 hours.
   b. If the Battery Fault LED is red, replace the batteries ("UPS battery replacement procedure" on page 36).
3. Reduce the load:
   a. Power down the UPS ("Powering down the UPS" on page 30).

b. Remove one or more load devices to reduce the power requirements.
c. Wait at least 5 seconds and restart the UPS.
d. If the condition persists, verify that the load devices are not defective.

4. Allow the UPS to cool:
   a. Power down the UPS ("Powering down the UPS" on page 30).
   b. Clear vents and remove any heat sources.
   c. Verify that the airflow around the UPS is not restricted.
5. Wait at least 5 minutes and restart the UPS.
6. If the condition persists, contact an HP authorized service representative.

Input voltage is out of range

Action:

1. Check the input voltage and reconfigure the UPS ("Configuring the UPS" on page 28).
2. Contact a qualified electrician to verify that the utility power is suitable for the UPS.

Insufficient warning of low batteries

Action:

1. Verify that the power management software is not delaying the shutdown of attached servers when the UPS is in a low battery condition.
2. Allow the UPS batteries to charge for 48 hours.
3. If the Battery Fault LED is red, replace the batteries ("UPS battery replacement procedure" on page 36).

Internal UPS fault condition

Action:

1. Power down the UPS ("Powering down the UPS" on page 30).
2. If the condition persists, contact an HP authorized service representative.

Low battery shutdowns

Ungraceful shutdown of attached servers occurs when the UPS is in a low battery condition.

Action:

1. Verify that the power management software is not delaying the shutdown of attached servers when the UPS is in a low battery condition.
2. Allow the UPS batteries to charge for 48 hours.
3. If the Battery Fault LED is red, replace the batteries ("UPS battery replacement procedure" on page 36).

Overload condition

All the load LEDs are illuminated.

Action:

1. Power down the UPS ("Powering down the UPS" on page 30).
2. Remove one or more load devices to reduce the power requirements.
3. Wait at least 5 seconds and restart the UPS.
4. If the condition persists, verify that the load devices are not defective.

REPO condition

Action:

- If the remote switch is closed, then open the switch to enable power to the output receptacles.
- If the condition occurred while reconnecting a disconnected REPO port, then verify the polarity of the REPO connector pins.

For more information about REPO ports, see "Connecting the REPO port (on page 20)."

Site wiring condition

Action: Contact a qualified electrician to be sure that:

- The utility power receptacle is grounded.
- There is a ground wire in the UPS power cord.
- The line and neutral wires are not reversed in the wall outlet.

UPS does not provide the expected backup time

Action:

1. If the Overload LED ("UPS front panel controls" on page 7) is illuminated, remove one or more load devices to reduce the power requirements.
2. Allow the UPS batteries to charge for 48 hours.
3. If the Battery Fault LED is red, replace the batteries ("UPS battery replacement procedure" on page 36).
4. During extended power outages, save your work, power down the load devices, and then power down the UPS ("Powering down the UPS" on page 30) to conserve battery power.

UPS does not start

Action:

1. Be sure that the power cord is plugged in to a utility power receptacle.
2. Check the power source at the utility power receptacle.

UPS frequently switches between utility and battery power

Action:

1. Check the input voltage and reconfigure the UPS ("Configuring the UPS" on page 28).
2. Contact a qualified electrician to verify that the utility power is suitable for the UPS.

UPS is in Auto-Bypass mode

Action:

1. If power management software is being used, check the log files to obtain specific error information to help identify the problem.

   For more information about the causes of a general fault condition, see the HP Power Manager user guide available for download from the HP website (http://www.hp.com/go/rackandpower).
2. Verify that no blockage of airflow to the front bezel and rear panel exists.
3. If the LED does not turn off, replace the electronics module. ("Replacing the UPS electronics module" on page 33)

UPS is on battery

Action: Save files and shut down connected equipment.

Utility power condition

The utility input voltage is outside the operating range.

Action:

1. Check the input voltage and reconfigure the UPS ("Configuring the UPS" on page 28).
2. Contact a qualified electrician to verify that the utility power is suitable for the UPS.

Specifications

UPS physical specifications

Parameter	Value
Height	13.03 cm (5.13 in)
Depth	66.04 cm (26 in)
Width	44.15 cm (17.38 in)
Weight	68 kg (150 lb)

ERM physical specifications

Parameter	Value
Height	13.03 cm (5.13 in)
Depth	63.83 cm (25.13 in)
Width	44.45 cm (17.50 in)
Weight	75 kg (167 lb)

UPS input specifications

NOTE: An asterisk (*) indicates the default setting.

UPS model	Utility voltage frequency (Hz)	Available settings utility voltage (VAC)	Dedicated branch circuit rating (A)	Line cord
R5500 XR NA/JPN	50/60	200/208*, 220, 230, 240	30	Nondetachable power cord with NEMA L6-30 plug
R5500 XR INTL	50/60	200/208, 220, 230*, 240	32	Nondetachable power cord with 32 A IEC-309 plug

UPS output specifications

UPS model	Load segment	Circuit breaker	Output receptacles	Maximum current
R5500 XR NA/JPN	1	15 A[1]	2 x IEC-320-C19	15 A per receptacle[2]

UPS model	Load segment	Circuit breaker	Output receptacles	Maximum current
			2 x IEC-320-C13	10 A per receptacle
			1 x L6-30R	Up to full UPS power rating
	2	15 A[1]	2 x IEC-320-C19	15 A per receptacle[2]
			2 x IEC-320-C13	10 A per receptacle
R5500 XR INTL	1	15 A[1]	2 x IEC-320-C19	15 A per receptacle[2]
			2 x IEC-320-C13	10 A per receptacle
			1 x IEC-309-32A	Up to full UPS power rating
	2	15 A[1]	2 x IEC-320-C19	15 A per receptacle[2]
			2 x IEC-320-C13	10 A per receptacle

[1]**NOTE:** The circuit breakers protect the C19 and C13 outlets.

[2]**NOTE:** If an extension bar is connected to a C19 receptacle, the maximum current for each C13 receptacle on the extension bar is 10 A. The total maximum current for the extension bar is 12 A.

Power protection specifications

UPS model	VA	Nominal power rating (W)	Nominal voltage setting
R5500 XR NA/JPN	5000	4500	200/208, 220, 230, 240
R5500 XR INTL	6000	5400	220, 230, 240
	5000	4500	200/208

Voltage specifications

Configuration setting (VAC)	Available nominal output voltage (VAC)
200/208	204
220	220
230	230
240	240

Output tolerance specifications

Source of power	Regulation
Utility power (nominal range)	-10% to +6% of nominal output voltage rating (within the guidelines of the Computer Business Equipment Manufacturers Association)
Battery power	±5% of nominal output voltage rating

Output feature specifications

Feature	Specification
Online efficiency	94% nominal input voltage
Voltage wave shape	Sine wave; 5% THD with typical PFC load
Surge suppression	High-energy 6500 A peak
Noise filtering	MOVs and line filter for normal and common mode use

Battery specifications

Feature	Specification
Type	Each model contains maintenance-free, sealed, valve regulated lead-acid batteries with an 8-year minimum float service life at 25°C (77°F).
Voltage	The battery modules have a battery string voltage of 240 V.
Charging	Complete charge takes no more than 48 hours. Approximately 3 hours to 80 percent capacity at default nominal utility voltage and no load.

Battery runtime for NA/JPN model

Load, W (percent)	Estimated battery runtime (minutes)	Runtime with one ERM (minutes)	Runtime with two ERMs (minutes)
20	59	169	303
50	19	61	106
80	9	31	60
100	7	24	46

Battery runtime for INTL model

Load, W (percent)	Estimated battery runtime (minutes)	Runtime with one ERM (minutes)	Runtime with two ERMs (minutes)
20	49	138	247

Load, W (percent)	Estimated battery runtime (minutes)	Runtime with one ERM (minutes)	Runtime with two ERMs (minutes)
50	15	49	85
80	7	25	48
100	5	19	36

Environmental specifications

Feature	Specification
Operating temperature	10°C to 40°C (50°F to 104°F); UL-tested at 25°C (77°F)
Nonoperating temperature	-25°C to 55°C (-13°F to 131°F)
Relative humidity	20% to 80%; noncondensing
Operating altitude	Up to 2,000 m (6,600 ft) above sea level
Nonoperating altitude	15,000 m (49,212 ft) above sea level
Audible noise	Less than 45 dBA, normal operation Less than 50 dBA, on battery power

REPO port specifications

The REPO port meets the requirements of NFPA Articles 645-10 and 645-11 for a Disconnecting Means.

Spares

Ordering spares

To order a spare, visit the HP website (http://h61003.www6.hp.com).

To replace parts under warranty, contact an HP authorized service representative.

UPS spare parts list

Item	Description	Spare part number
1	X-slot serial card	419180-001
2	Mounting rail	419181-001
3	Electronics module NA/JPN	407417-D71
	Electronics module INTL	407418-B31
4	UPS/ERM mounting hardware	407420-001
5	Front bezel UPS	N/A
	Front bezel ERM	N/A
6	Cord retention clip (for C13 outlets only)	204505-001
7	UPS battery module	407419-001

Item	Description	Spare part number
8	Computer interface cable	397642-001
9	Extension bars and mounting hardware	419595-001*
10	UPS unit NA/JPN	407415-D71*
	UPS unit INTL	407416-B31*
11	ERM unit	407439-001*
12	10 A jumper cord	142258-006*

* not shown

Hardware options

For information on the supported hardware options, see the HP website (http://www.hp.com/go/rackandpower).

Technical support

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For the name of the nearest HP authorized reseller:

- In the United States, see the HP US service locator webpage (http://www.hp.com/service_locator).
- In other locations, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

For HP technical support:

- In the United States, for contact options see the Contact HP United States webpage (http://welcome.hp.com/country/us/en/contact_us.html). To contact HP by phone:
  - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website (http://www.hp.com).
- In other locations, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

Warranty information

Limited warranty

To back up the wide range of features offered with the UPS, a 3-year limited warranty is provided.

$250,000 Computer Load Protection Guarantee

In addition to the limited warranty, a $250,000 Computer Load Protection Guarantee (provided by the original equipment manufacturer) is offered.

IMPORTANT: The $250,000 Computer Load Protection Guarantee is offered only in The United States and Canada.

The $250,000 Computer Load Protection Guarantee only applies if:

- The UPS is plugged into a suitably grounded and wired outlet using no extension cords, adapters, other ground wires, or other electrical connections.
- The UPS installation complies with all applicable electrical and safety codes specified by the NEC.
- The UPS is used under normal operating conditions and users comply with all instructions and labels.
- The UPS is not damaged by accident (other than a utility power transient), misuse, or abuse.
  - The Guarantee applies only to the original end-user and is non-transferable.
  - The Guarantee does not include reimbursement for or restoration of any data loss.
- The UPS is either connected directly to an enterprise class PDU, which is then connected directly to a server, workstation, or personal computer, or the UPS is connected directly to a server, workstation, or personal computer.

Pre-Failure Battery Warranty

The Pre-Failure Battery Warranty, standard on all UPS units, extends the advantage of a 3-year limited warranty by applying it to the battery before it actually fails. The Pre-Failure Battery Warranty ensures that the battery is replaced free of charge when a notification that the battery might fail is received from power management software. The battery warranty coverage is 3 years for parts. The warranty for the first year of ownership includes parts and labor. If battery spares are not available for a particular UPS model, the entire UPS, including its battery, is replaced.

A Pre-Failure Battery warning is given 30 days before a battery failure. The warning is indicated in one or both of the following ways:

- An LED showing the battery is low
- Notification from power management software

Regulatory compliance notices

Regulatory compliance identification numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

Federal Communications Commission notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

FCC rating label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

Class A equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency

energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit that is different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Declaration of conformity for products marked with the FCC logo, United States only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this product, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 530113
  Houston, Texas 77269-2000
- 1-800-HP-INVENT (1-800-474-6836). (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 510101
  Houston, Texas 77269-2000
- 1-281-514-3333

To identify this product, refer to the part, series, or model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian notice (Avis Canadien)

Class A equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union regulatory notice

This product complies with the following EU Directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family.

This compliance is indicated by the following conformity marking placed on the product:

This marking is valid for non-Telecom products and EU harmonized Telecom products (e.g. Bluetooth).

This marking is valid for EU non-harmonized Telecom products.

*Notified body number (used only if applicable—refer to the product label)

Hewlett-Packard GmbH, HQ-TRE, Herrenberger Strasse 140, 71034 Boeblingen, Germany

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Japanese notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です　この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

BSMI notice

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Battery replacement notice

⚠ **WARNING:** Power products contain sealed lead-acid battery modules. A risk of fire and burns exists if the battery is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water. The battery might explode.

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to HP, an authorized HP Partner, or their agents.

For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

Taiwan battery recycling notice

The Taiwan EPA requires dry battery manufacturing or importing firms in accordance with Article 15 of the Waste Disposal Act to indicate the recovery marks on the batteries used in sales, giveaway or promotion. Contact a qualified Taiwanese recycler for proper battery disposal.

Power cord statement for Japan

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Acronyms and abbreviations

ERM

extended runtime module

LED

light-emitting diode

NEC

National Electrical Code

NEMA

National Electrical Manufacturers Association

NFPA

National Fire Protection Association

PDU

power distribution unit

PFC

power factor corrected

REPO

remote emergency power off

UPS

uninterruptible power system

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